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10/723,221	11/26/2003	Prakash Parayil Mathew	133277IT/YOD GEMS:0235	8494

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EXAMINER	
TUCKER, WESLEY J	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/723,221	**Applicant(s)** MATHEW ET AL.
	Examiner Wes Tucker	**Art Unit** 2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed July 23rd 2007 has been entered and made of record.

2. Applicant has amended claims 1, 9, 11, 12, 13, 20 and 24-27. Claims 2 and 3 have been cancelled. New claims 28 and 29 have been added. Claims 1 and 4-29 are pending.

3. Applicant's remarks in view of the newly presented claim amendments have been considered. However, the amendments have altered the scope of the claimed invention and necessitate new grounds of rejection. That rejection is presented below and is accordingly made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 4-29 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,825,908 to Pieper et al.

With regard to claim 1, Pieper discloses a method of processing image data comprising:

Comparing image data representative of a plurality of images, wherein the plurality of images represent spatially adjacent subject matter (Figs. 3, 11 and 14);

Characterizing a level of change of the image data from one image to the next in the plurality of images (column 13, lines 10-32 and Figs. 3, 11 and 14); and

Presenting a viewer with indicia of relative levels of change of the image data for the plurality of images (column 13, lines 10-32 and Figs. 3, 11 and 14).

Pieper discloses a system fro creating a 3D model for use in medical diagnostics. Multiple reconstructed images "slices" or frames are taken of a 3D object, and from these slices, a 3D model is created. New slices can also be created in directions perpendicular to the first slice direction. Pieper also discloses a user interface that enables a user to navigate through the 3D model by scrolling back and forth between the slices. The level of change between these images is evident in that each slice is slightly different from the last and that each slice represents a change in position in the 3D model. This is interpreted as a graphical representation of progressive change. Fig. 11 shows an interface with a slider bar 70 that can be used to scroll through images by dragging the slider left or right to view the next image slices in the model for example. Fig. 14 shows the corresponding slices in different directions for a location within the 3D model. When the user views the slices by sliding back and forth this is considered an indicia of levels of change of the plurality of images. Indeed the level of change

between each image can be seen as the slice gradually and progressively changes as the slice passes through a patient's liver for example.

With regard to claim 4, Pieper discloses the method of claim 1, wherein the level of change is characterized by analyzing absolute differences between adjacent images in the plurality of images (column 11, lines 18-35). Pieper disclose the generation of a 3D model using the multiple 2D slices that are for example 1mm apart (column 9, lines 55-64). In order to construct a 3D model with a continuous surface, the difference between each adjacent slice image must be inherently known. The content of the 3D model between each slice must be interpolated or at the very least guessed. Therefore the absolute differences are compared between each pair of slices in order to create the 3D model and reconstructed 3D surface.

With regard to claim 5, Pieper discloses the method of claim 4, wherein the absolute differences are analyzed on a pixel-by-pixel basis (column 11, lines 18-35). The differences between each slice must be known to create the 3D image model. The differences in between each slice are considered determined on a pixel-by-pixel basis, as the differences between each slice may be very small, each slice being 1mm apart.

With regard to claim 6, Pieper discloses the method of claim 1, wherein characterizing a level of change of the image data includes characterizing change due to noise in the image data, and not including changes due to noise in the presented

media (column 6, lines 35-41). Pieper discloses smoothing out unwanted noise when determining 3D model data.

With regard to claim 7, Pieper discloses the method of claim 1, wherein the presented indicia include a graphical representation of progressive change between images of the plurality of images (Figs. 3, 11 and 14). Pieper discloses the slider 70 of Fig. 11, which is considered a graphical representation of progressive change between images. Pieper also discloses the creation of 3D model, which is also a graphical representation of the progressive change between images.

With regard to claim 8, Pieper discloses the method of claim 7, comprising presenting the viewer with a virtual tool for navigating through the plurality of images based upon the progressive change between images (Fig. 11).

With regard to claim 9, Pieper discloses a method for diagnosing a patient, comprising:

Acquiring a plurality of reconstructed images via a medical imaging system (Figs. 11, 12 and 13 and column 9, lines 1-10);

Comparing image data representative of the plurality of reconstructed images (column 9, lines 55-64 and column 13, lines 10-32); and

Generating a scout navigation tool by characterizing a level of change of the image data from one reconstructed image to the next in the plurality of reconstructed images, the scout navigation tool including a graphical representation of progressive change between reconstructed images and a virtual tool for navigating through the plurality of reconstructed images based upon the level of change (column 13, lines 10-32 and Figs. 11 and 14).

Pieper discloses a system fro creating a 3D model for use in medical diagnostics. Multiple reconstructed images "slices" or frames are taken of a 3D object, and from these slices, a 3D model is created. New slices can also be created in directions perpendicular to the first slice direction. Pieper also discloses a user interface that enables a user to navigate through the 3D model by scrolling back and forth between the slices. The level of change between these images is evident in that each slice is slightly different from the last and that each slice represents a change in position in the 3D model. This is interpreted as a graphical representation of progressive change. Fig. 11 shows an interface with a slider bar 70 that can be used to scroll through images by dragging the slider left or right to view the next image slices in the model fro example. Fig. 14 shows the corresponding slices in different directions for a location within the 3D model.

With regard to claim 10, Pieper discloses the method of claim 9, comprising displaying the scout navigation too on a viewable screen (Figs. 11 and 14).

With regard to claim 11, Pieper discloses the method of claim 10, comprising receiving inputs from a viewer via the scout navigation tool and displaying reconstructed images from the plurality of reconstructed images based upon the inputs (Fig. 11, see discussion of slider bar 70).

With regard to claim 12, Pieper discloses the method of claim 10, comprising receiving inputs from a viewer via the scout navigation tool and storing reconstructed images from the plurality of reconstructed images based upon the inputs (Figs. 11 and 14).

With regard to claim 13, Pieper discloses the method of claim 10, comprising receiving inputs from a viewer via the scout navigation tool and processing reconstructed images from the plurality of reconstructed images based upon the inputs (Figs. 11 and 14).

With regard to claim 14, Pieper discloses the method of claim 10, comprising displaying the scout navigation tool adjacent to an image viewing region of the viewable screen (Fig. 11, element 70).

With regard to claim 15, Pieper discloses the method of claim 9, wherein the plurality of reconstructed images represent a same subject of interest at different points in time (Figs. 11 and 14). Pieper discloses a CT scan or MRI environment wherein

pictures are taken one at a time of incremental slice images of a portion of the subject. This is considered different points in time and of the same subject of interest.

With regard to claim 16, Pieper discloses the method of claim 9, wherein the plurality of reconstructed images represent spatially adjacent subject matter at generally the same point in time (Figs. 11 and 14).

With regard to claim 17, Pieper discloses the method of claim 9, wherein the level of change is characterized by analyzing absolute differences between adjacent reconstructed images in the plurality of reconstructed images (column 11, lines 18-35). Pieper disclose the generation of a 3D model using the multiple 2D slices that are for example 1mm apart (column 9, lines 55-64). In order to construct a 3D model with a continuous surface, the difference between each adjacent slice image must be inherently known. The content of the 3D model between each slice must be interpolated or at the very least guessed. Therefore the absolute differences are compared between each pair of slices in order to create the 3D model and reconstructed 3D surface.

With regard to claim 18, Pieper discloses the method of claim 17, wherein the absolute differences are analyzed on a pixel-by-pixel basis (column 11, lines 18-35). The differences between each slice must be known to create the 3D image model. The

differences in between each slice are considered determined on a pixel-by-pixel basis, as the differences between each slice may be very small, each slice being 1mm apart.

With regard to claim 19, Pieper discloses the method of claim 18, wherein characterizing a level of change of the image data includes characterizing change due to noise in the image data, and not including changes due to noise in the presented media (column 6, lines 35-41). Pieper discloses smoothing out unwanted noise when determining 3D model data.

With regard to claim 20, Pieper discloses a system for processing image data comprising:

A memory device for storing image data (column 4, lines 55-65);

Processing circuitry (column 4, lines 55-65) configured to compare image data representative of a plurality of images acquired via a medical imaging system and not as video and to generate a scout navigation tool by characterizing a level of change of the image data from one image to the next in the plurality of images, the scout navigation tool including a graphical representation of progressive change between images of the plurality of images and a virtual too navigating through the plurality of images based upon level of change (column 13, lines 10-32 and Figs. 11 and 14).

Pieper discloses a system fro creating a 3D model for use in medical diagnostics. Multiple reconstructed image slices or frames are taken of a 3D object, and from these slices, a 3D model is created. New slices can also be created in directions

perpendicular to the first slice direction. Pieper also discloses a user interface that enables a user to navigate through the 3D model by scrolling back and forth between the slices. The level of change between these images is evident in that each slice is slightly different from the last and that each slice represents a change in position in the 3D model. This is interpreted as a graphical representation of progressive change. Fig. 11 shows an interface with a slider bar 70 that can be used to scroll through images by dragging the slider left or right to view the next image slices in the model fro example. Fig. 14 shows the corresponding slices in different directions for a location within the 3D model.

With regard to claim 21, Pieper discloses the system of claim 20, comprising a user viewable display for displaying the scout navigation tool and images from the plurality of images based upon user inputs (Fig. 11, see slider 70).

With regard to claim 22, Pieper discloses the system of claim 21, comprising a user input device for selection of images for viewing from the plurality of images via manipulation of the virtual tool (Fig. 11, see slider 70).

With regard to claim 23, Pieper discloses the system of claim 22, wherein the virtual tool includes a slider displayed adjacent to the graphical representation (Fig. 11).

With regard to claim 24, Pieper discloses a system for diagnosing a patient comprising:

Means for comparing image data representative of a plurality of diagnostic images of the patient acquired via medical imaging system, wherein the plurality of images represent spatially adjacent subject matter (Figs. 11 and 14);

Means for characterizing a level of change of the image data from one image to the next in a plurality of images (Fig. 11);

Means for presenting a viewer with indicia of relative levels of change of the image data fro the plurality of images (column 13, lines 10-32 and Figs. 11 and 14).

Pieper discloses a system fro creating a 3D model for use in medical diagnostics. Multiple reconstructed image slices or frames are taken of a 3D object, and from these slices, a 3D model is created. New slices can also be created in directions perpendicular to the first slice direction. Pieper also discloses a user interface that enables a user to navigate through the 3D model by scrolling back and forth between the slices. The level of change between these images is evident in that each slice is slightly different from the last and that each slice represents a change in position in the 3D model. This is interpreted as a graphical representation of progressive change. Fig. 11 shows an interface with a slider bar 70 that can be used to scroll through images by dragging the slider left or right to view the next image slices in the model fro example. Fig. 14 shows the corresponding slices in different directions for a location within the 3D model.

With regard to claim 25, Pieper discloses a system fro processing image data comprising:

Means for comparing image data representative of a plurality of images acquired via a medical diagnostic imaging system (Figs. 11 and 14); and

Means for generating a scout navigation tool by characterizing a level of change of the image data fro one image to the next in the plurality of images, the scout navigation tool including a graphical representation of progressive change between images of the plurality of images and a virtual tool for navigating through the plurality of images based upon the level of change (column 13, lines 10-32 and Figs. 11 and 14), wherein characterizing a level of change of the image data includes characterizing change due to noise in the image data (column 6, lines 34-41).

Pieper discloses a system fro creating a 3D model for use in medical diagnostics. Multiple reconstructed image slices or frames are taken of a 3D object, and from these slices, a 3D model is created. New slices can also be created in directions perpendicular to the first slice direction. Pieper also discloses a user interface that enables a user to navigate through the 3D model by scrolling back and forth between the slices. The level of change between these images is evident in that each slice is slightly different from the last and that each slice represents a change in position in the 3D model. This is interpreted as a graphical representation of progressive change. Fig. 11 shows an interface with a slider bar 70 that can be used to scroll through images by dragging the slider left or right to view the next image slices in the model fro example. Fig. 14 shows the corresponding slices in different directions for a location within the 3D

model. Pieper also discloses that noise is accounted for when creating the 3D model data (column 6, lines 34-51).

With regard to claim 26, Pieper discloses a computer readable medium having instructions for performing the method discussed in independent claims 9, 20, 24 and 25 (column 11, lines 50-65).

With regard to claim 27, Pieper discloses a computer readable medium (column 11, lines 50-65). The discussion of claims 9, 20, 24 and 25 also apply.

With regard to claim 28, Pieper discloses the method of claim 1, wherein the medical imaging system comprises a computer tomography system (Fig. 11).

With regard to claim 29, Pieper discloses the method of claim 9, comprising storing the reconstructed images on a picture and archive communication system (PACS), wherein the medical imaging system comprises a computed tomography system (Fig. 11).

Final Rejection

4. Applicant's amendment necessitated the new grounds of rejection presented in the Office Action. Accordingly, THIS ACTION IS MADE FINAL. See

MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wes Tucker

11-1-07

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